

JAMES COPPER & CO
HIGH HOLBORN
LONDON

IMPORTANT NOTICE.

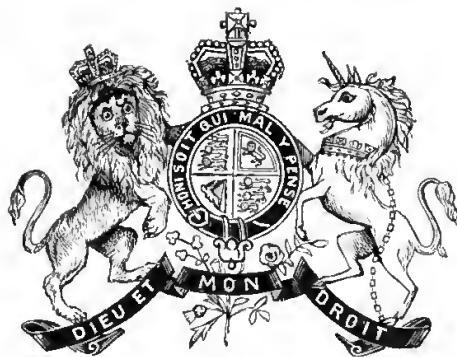
All who are interested in the making or upkeep of Golf Courses, Lawns, and other grassy grounds are invited to communicate with us before entering into any contracts for the formation of a new ground, or when met by any difficulty in the upkeep of an established ground.

We have, by continual experiment and long experience, accumulated a vast amount of useful knowledge, all of which we unreservedly place at the disposal of our esteemed customers, and others, absolutely free of charge.

All who are in difficulty should write to us, giving full particulars, and send samples of soil, grasses, weeds, etc., that are the suspected cause of the difficulty, and we will answer the inquiry by letter promptly, and to the best of our ability.

In cases of some importance, such as the laying down of a new ground or the sudden deterioration of an important lawn or green, we are prepared to send out one of our Experts on grass to thoroughly inspect the ground and write a full report thereon. For this we charge our Expert's out-of-pocket expenses only, unless the distance to be travelled is out of all proportion to the size of the ground to be inspected, when we would, by agreement, make an additional charge of one guinea per day or part of a day.

We wish it to be understood that those who avail themselves of our services will on no account be importuned for orders.



GRASS.

BY

James Carter & Co

Seedsmen by Royal Warrant to His Majesty the King.

JAMES CARTER & CO.

237, 238, & 97, HIGH HOLBORN, LONDON.

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GRASS.

CHAPTER I.

HOW TO MAKE A NEW LAWN.

Autumn Sowing.

One of the best seasons to commence the operation of making a new lawn is as soon as possible after the break up of the hot summer weather, with the intention of sowing, if possible, at the end of August or during the early days of September. The soil is warm at the end of summer, and an abundance of rain and dew may be expected, which is very beneficial to the growth of the seed, and the young grass will have ample time to become well established before the real cold weather sets in, and, as weeds are far more in evidence in the spring than they are in the autumn, it follows that the long start given to the autumn sown grass should make it better able to withstand the onslaughts of any weeds that may be lying dormant in the soil when they appear in the spring.

Spring Sowing.

Prepare the ground as soon as the weather permits, and sow the seed (again weather permitting) early in March, or should it be a severe season sow during the early days of April.

It is always a good policy to allow as much time as possible in which to prepare the ground. A month or six weeks is not too much, as the surface will, to a certain extent, find its own level, which can more easily be corrected before than after the seed is sown. When the work is done in a hurry it is generally badly done, as it gives no chance for the surface to consolidate, which is so essential for the welfare of the young grass plants, or for quick-growing weeds to assert themselves and be destroyed before the grass seeds are sown. A lawn made under our system, if autumn sown, that is, during the end of August or the beginning of September, should be fit for play by the end of the following spring; if spring sown, that is, during March or early in April, should be fit for play before the end of the summer. These results cannot be obtained if old-fashioned, parsimonious methods are adopted. The making of a new lawn can roughly be divided into five operations, viz.: Digging, Manuring, Preparing the Seed Bed, Seeding, and After Treatment.



Digging the Ground.

Dig to the depth of a spade, turn the soil well over, break up the large clods, pick out all large stones, weeds, roots, &c. Grass being a shallow-rooted plant makes it quite unnecessary to work the soil to a greater depth, unless the old turf is to be buried, then the surface should be turned under to a depth of two spades.

Manuring.

This is an important operation, and one that is generally omitted altogether, or is badly carried out. The best general manures are peat moss stable litter, old well-rotted short straw, and artificials. In all cases spread the manure over the surface and fork it in to a depth of from 3 to 6 ins.; in this way its fullest benefits are available within 3 or 4 ins. of the surface.

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Preparing the Seed Bed.

Prepare the seed bed by breaking up the clods, removing large stones, and all weed roots with an iron toothed rake; roll and cross roll the ground with a light roller until the surface is perfectly level, and, when walked on, hardly shows the imprint of the foot, which will then be ready to receive the seed.

Seeding.

Choose a calm, dry day for this work, otherwise much of the seed may be blown away and lost, or should the soil be wet it will stick to the operator's boots, and in this way the level may be seriously disturbed. Slightly stir the surface with a rake, and divide up the ground into strips about 3 ft. wide by means of pegs and string (see page 34), and divide the seed into as many equal portions as there are strips or squares; this will be found an easy way to ensure an even distribution of the seed. Sow the seed by hand, with the back bent, taking care to spread it as evenly as possible over the surface. The seed must now be covered to a depth not exceeding $\frac{1}{4}$ of an inch, otherwise



much of it will be lost. There are two ways of doing this, the most simple being to lightly rake the surface in two directions, taking care not to bury the seed too deeply. This is the method adopted by most professional gardeners. Another way is to cover the seed with light sifted soil, as free from weed seeds as possible. A skilled man can very quickly cover a fair-sized lawn by scattering the sifted soil with a shovel. People who are not adepts at this may carry the sifted soil in a pail and scatter it over the surface by hand. After levelling with a rake the whole should be lightly rolled down.

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After Treatment of a New Lawn.

The young grass should appear above the ground from 14 to 21 days after sowing, according to the weather. When about 1 in. high it is greatly benefited by an application of Carters' Fertilising Fibre or Compost (see p. 36), scattered at the rate of 8 to 10 bags to a full-sized Croquet or Tennis Lawn. The Fibre, which is impregnated with manure, in cold weather protects the young plants from the frost, and in warm weather assists to conserve the moisture, while the manure acts as a stimulator. Later, when the young growth is from $1\frac{1}{2}$ to 2 ins. high, it is ready to be cut. It is necessary for the welfare of the young spears to cut them with a scythe the first two or three times, so as to enable the roots to become sufficiently strong to be able to resist the slight snatching movement of a machine, which can then be used with safety. Any thin or bare places should be repaired as soon as noticed by very carefully loosening the surface soil, sowing a handful of seed, covering and rolling in the usual manner. The lawn should be rolled with a light roller after the grass is cut for the first time or two.



ROLLING.

THE RENOVATION OF A WORN OR POOR TURF.

The chief causes of a worn or poor turf are hard usage, poverty of soil, or want of proper drainage.

The result of hard usage is shown by the appearance of bare patches; the trade mark of a poor soil is a thin turf and bare patches, with moss and an increasing number of weeds; while moss and stagnant water usually denote faulty drainage. Further on we deal with weeds and drainage separately, and we will now presume that the lawn is suffering from hard wear or poverty of soil. In both these cases the remedy is the same. Mow the lawn with a mowing machine, cutting the grass as short as possible, then rake and cross-rake the surface with an iron toothed rake, taking care to thoroughly open up the surface. It is well to remember that the more the existing plant appears to be ruined, short of actually pulling it out by the roots, the better will be the results; and that unless the surface is loosened sufficiently, the roots of the young grass will not be able to penetrate the old turf, and consequently they will die, and the whole work prove a failure. There are now two ways of completing the work, the first being to sow the seed on the raked surface, choosing a dry day, otherwise a quantity of the seed will stick to the wet leaves of the existing plant and so perish. If the raking has been carried out well, the surface will present a multitude of little furrows, which will receive the seed, and make excellent seed beds. Sow the seed thickly or thinly, according to the state of the turf. Cover the seed with prepared soil or compost (see page 15), either by scattering it with a shovel or by hand. The alternative is to scatter prepared soil over the area under treatment before sowing the seed, then to sow and cover in the usual manner, the finishing touch being given with a light roller, which should be drawn over the lawn in two different directions.



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TO MAINTAIN A LAWN IN GOOD CONDITION.

It is very simple to keep a lawn in good condition, although it entails a certain amount of expense and constant work. If a lawn is not kept up to the mark it is sure to deteriorate; the weeds will multiply, the soil become more poverty stricken, and eventually it will have to be either re-sown or renovated.

A story runs that an American, admiring the really wonderful lawns at the Universities, and hoping to get some useful information, asked the gardener how it was done. The gardener's reply was, that "they rolled 'em and mowed 'em, and rolled 'em and mowed 'em for 300 years." To this we should like to suggest that they top dressed 'em and weeded 'em for the same period, as our experiments, although they have not extended over 300 years, have been in existence sufficiently long enough to fully prove that a lawn cannot be kept in first-class condition unless it is frequently top dressed, particularly when the turf is much used. We advise our customers to top-dress their lawns at least once or twice a year with either our Complete Grass Manure or prepared compost, the best season of application being between September and October, or March and April. The rolling and mowing part of the programme should also be carried out, using a light roller and a good machine, which must be kept in good running order. Lastly, the weeds must be reduced or exterminated, otherwise they will increase, and it is impossible for a lawn to be termed good when infested with weeds.



The appearance of seed stems is a sure sign that the grass has not been kept closely cut, or the mowing machine has not been properly adjusted. Remove them by using a sharp scythe, as they not only spoil the look of the lawn and weaken the turf, but also interfere with the "run" of the ball.

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WINDSOR CASTLE.

Carters' Grass Seeds are used on the Estates of His Majesty the King at Windsor, Sandringham, and at Buckingham Palace.

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DRAINAGE (PIPES).

This is rather a comprehensive subject, and one that cannot be treated lightly, and these notes should only be used as a base upon which to formulate a scheme to suit the particular case under consideration, as it is quite impossible to make hard-and-fast rules to suit all situations and formations of soils. Land drain pipes are perhaps the most popular for draining a lawn, and these should be laid in herring-bone formation, using 4-in. piping for the main drain, and 2 to 3 in. for the subsidiary drains. The pipes should be laid in trenches from 18 to 24 ins. deep, the subsidiary drains being about 10 to 15 ft. apart, and entering the main drain at an angle of over 45 degrees, so as not to arrest the flow of the water. It is advisable to set the joints in cement in the vicinity of shrubs or trees, otherwise their roots will enter the drain and possibly choke it; also partly to fill the trenches with clinkers or other porous material, as this will be found to increase the effectiveness of the drain, especially in clayey land. The depth of the drain, the size of pipes, and distance apart, being entirely dependent upon the character of the soil and general local conditions, must be decided by the person doing the work. Draining by means of pipes should be completed several months before any attempt is made to sow grass seed, as the soil in the trenches is bound to sink to a certain extent, and unless this can be corrected before the lawn is finished it is likely to give an unsightly appearance.

DRAINAGE (SHAFT).

Another and very effective way of draining a small lawn is to sink a vertical shaft about 4 ft. square in the centre of a level lawn, or at the lowest part of an uneven lawn or putting green, with the object of penetrating, if possible, into a porous stratum. Here local knowledge must again come into play. Generally speaking, one is pretty sure to strike something suitable at a depth of 10 or 15 ft. Fill the shaft with large stones or clinkers, building them in carefully and firmly, so as to leave as much room as possible for the water. From the shaft to the outskirts of the lawn cut four more trenches, being 12 to 15 ins. deep at the extreme end, about 2 ft. 6 ins. at the shaft end. In these lay 3-in. drain pipes, taking care to protect the shaft ends with large stones. Fill up the trenches and the top of the shaft with porous soil, and the work is complete. In the case of striking heavy clay, an effort should be made to penetrate it; but should this prove to be too difficult, make a good deep shaft, fill up the bottom with old tin cans, pails, &c., finish off with stones in the above manner. A shaft such as this will be found to be fairly effective.



LORD'S CRICKET GROUND.

The beautiful turf is formed with Carters' Grass Seeds.

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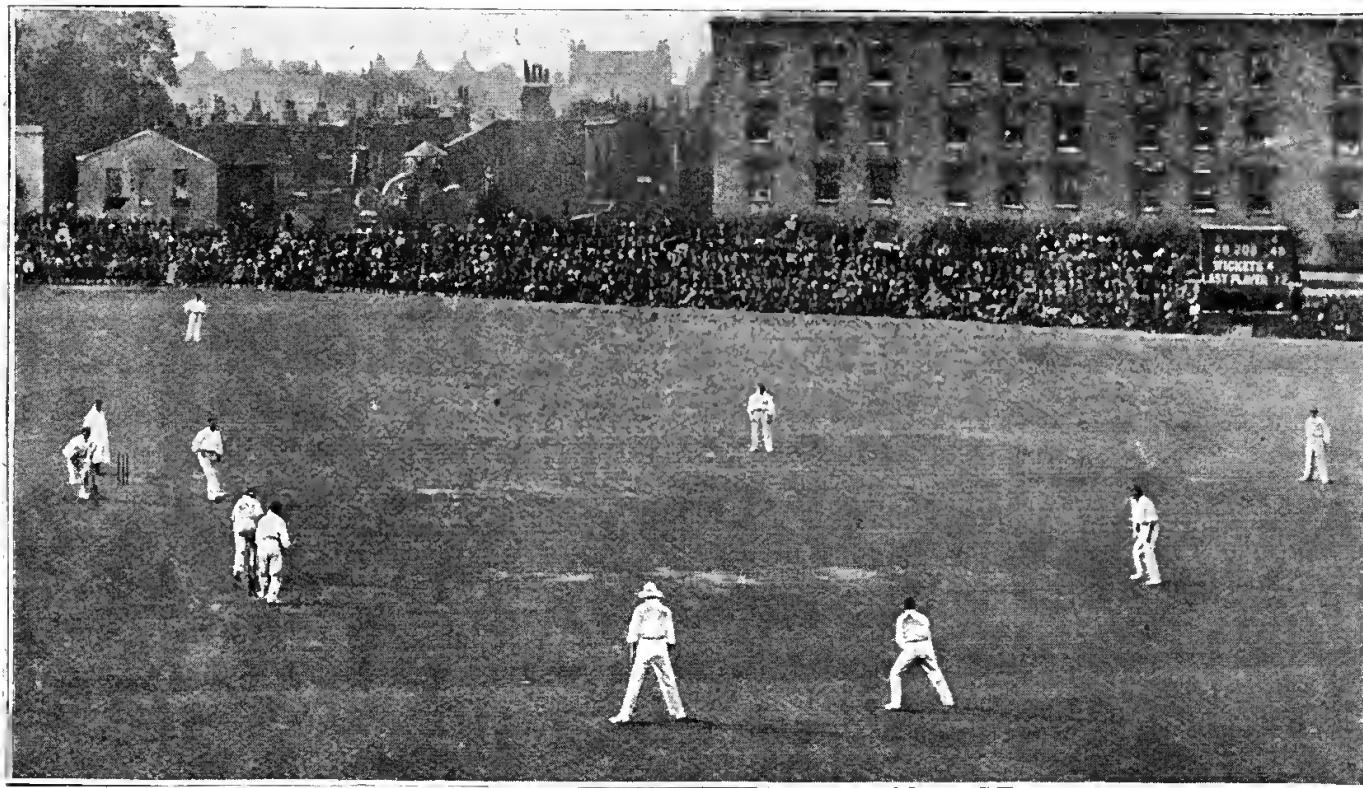
DRAINAGE (BORING)

Another method is to reach the porous stratum by means of a boring tool. The plant consists of a pair of sheers or tripod, a pulley wheel, and a boring tool to be turned by hand. With these a lawn can be drained without doing it any damage at all. Make a wooden platform about 6 ft. square, with a hole cut in the centre large enough to take the boring tool. Erect the sheers and pulley wheel over this. You now take the boring tool, which is for all the world like a large gimlet, and twist it into the earth, pulling it out every few minutes by means of the wheel so as to remove the loosened soil. By this means it is quite easy to sink drains to a depth of 20 or 30 ft. The wooden platform takes all the wear and dirt, and so prevents the work from injuring the turf. The number of drains required constructed in this way would depend upon the tenacity of the soil, but, as a rule, 10 ft. apart would be found to be a useful distance. The drains can be finished by either filling them to within a foot of the surface with shingle, or else by lining them with drain pipes. If the latter method be chosen the pipes must be lowered into position carefully, otherwise they will break. The best way to do this is to take a piece of wood slightly longer than the diameter of the pipe, to the centre of the stick fix a strong piece of cord, thread the pipes upon the cord, and lower into position. Finish off the drain by placing an inverted flower pot over it, and filling up the remaining distance with porous soil.

LEVELLING.

All small irregularities of the surface should be corrected when digging and preparing the ground.

A level lawn can be made on a slope by taking soil from the high ground, and placing it upon the low ground. On a deep soil this is very simple. In many cases where the soil is not very deep a level surface can be obtained by employing imported soil, but the bottom should always be loosened up first of all. When soil is imported for the purpose, and it is of uniform quality, it can be shot down where needed, and trodden down firmly, the surface being made even as the work proceeds; but, on the other hand, if the brought soil is of different qualities, it must be spread over in layers, keeping the stiff soil at the bottom, and the more friable on the surface. It is not advisable to go to the expense of work of this kind unless one is prepared to put at least 6 or 8 ins. of good light soil upon the surface. The usual method employed in levelling land is to drive stout pegs into the soil at equal distances, let us say 6 ft. apart;



THE OVAL.



WESTMINSTER SCHOOL GROUND.

Carters' Grass Seeds are used at the above and most of the leading cricket grounds.

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these pegs can be accurately adjusted by means of a spirit level, the soil is then made up to the level of the pegs. It is always advisable to allow made-up land to stand for some time before seeding, as it is pretty certain to settle in places, and the intervening time can be profitably occupied by correcting the level, freeing the land from weeds, and enriching the soil.

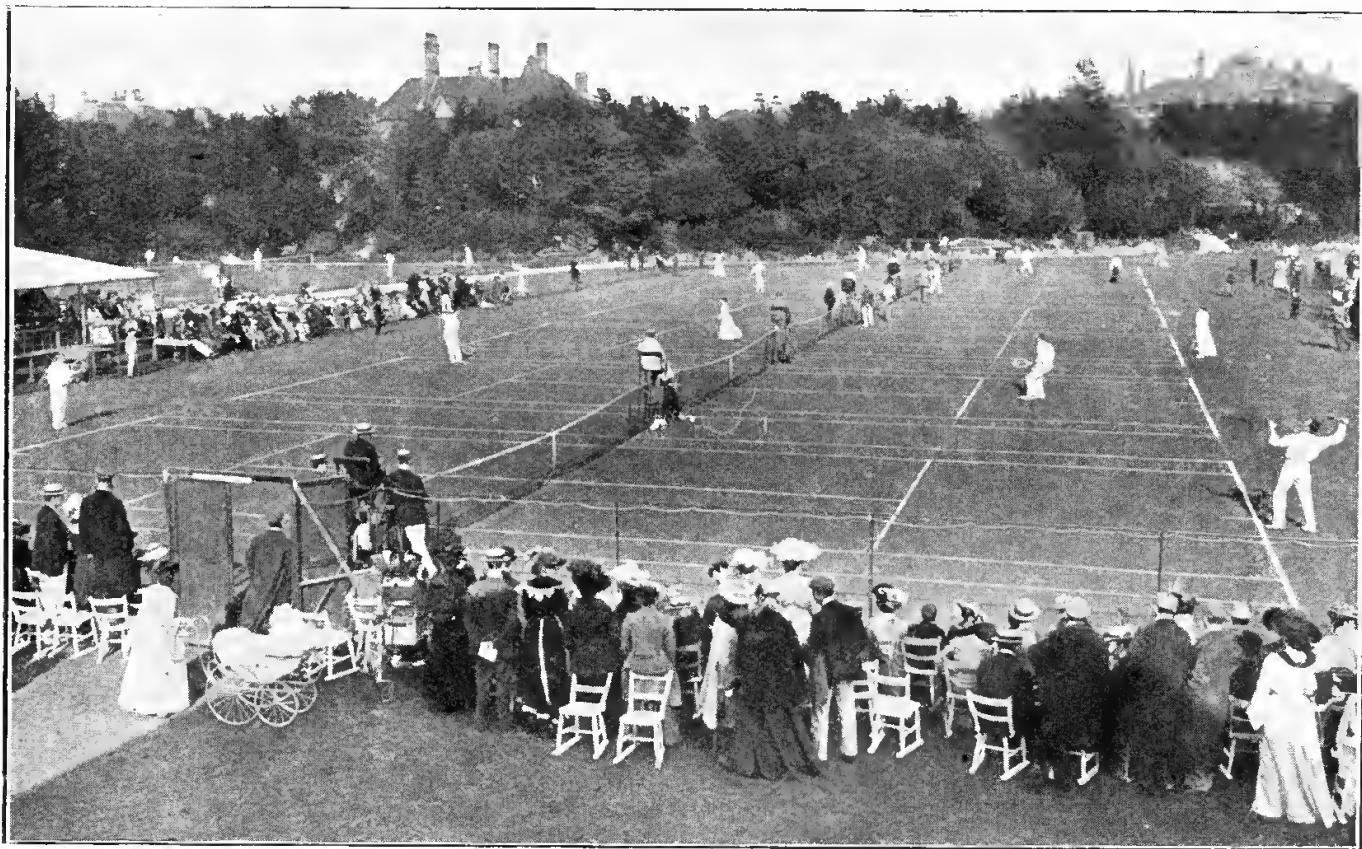
To correct the level of established turf, carefully remove the turf with a turfing iron, add or remove soil, as is necessary, and replace the turf.

MANURES.

This subject we will divide into two parts, viz.: Manures for digging into freshly broken ground, and manures or composts for top-dressing existing lawns or greens, with the object of improving them.

For Digging In.

In preparing ground for a lawn the majority of people will not see the importance of enriching the soil before sowing the seed. Several reasons are presented why the land should not be manured. It is either in good heart, or it appears to be, &c., &c. We present one, and only one, why land should be manured. It is this: When once a lawn is formed the turf has to obtain the larger share of its nourishment from a few inches of surface soil, possibly for ever. The soil cannot again be disturbed, consequently it does not get ameliorated by the action of air, rain, or frost, to the same extent as tilled land, which is continually being turned over, or relieved by a change of crop, and the grasses which form a turf are just as liable to suffer from starvation as anything else. When preparing ground for a lawn, however good the soil may appear to be, make assurance double sure by working into the surface one load of well-rotted straw manure to every 100 square yards on heavy soils, and a similar quantity of stable peat litter on light soils. These quantities can be increased with advantage should the soil be poor and the lawn likely to be subjected to hard wear. In cases where it is difficult or too expensive to obtain these manures, the ground should be treated with Carters' Complete Grass Manure, which is prepared under the direct supervision of our resident certificated analyst, and contains all the constituents essential to the growth of fine grasses. This manure should be spread over and raked in at the rate of 6 cwts. per acre, allowing a few days for the manure to lose its potency before sowing the grass, otherwise it may affect the germ of the seed (see page 36).



DEVONSHIRE PARK, EASTBOURNE.

*Carters' Grass Seeds are used by the All-England Tennis Club, Wimbledon
Devonshire Park, Eastbourne, Queen's Club, etc.*

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Manures and Composts for Top-Dressing.

We now come to the top-dressing manures and composts. These we will divide into prepared composts and raw material.

The former consists of stable or farm manure, fresh or old, which has been mixed with all or any of the following soils: leaf mould, night soil, old rotten turf, old potting soil, old hot beds, wood ashes, etc., and has been allowed to stand in a heap for some time, and has been turned over at least once or twice during that time.

This compost, before use, should be chopped up with a spade, and thrown through a $\frac{1}{4}$ -in. straight wire sand screen, and applied by scattering it with a shovel over the lawn any time of the year with the exception of the summer. The fine dressing produced and used in this way can be brushed in with a birch-broom or bush harrow, or, if left to the weather, will disappear from sight after the first rain shower, and so prevents the unsightly appearance of a lawn covered with clods. Another compost can be made up with good light soil and Carter's Complete Grass Manure, used in the proportion of 7 lbs. of the manure to a barrow of soil. The quantity required for a tennis lawn would be about 1 cwt. of manure and from 12 to 16 barrows of soil, well mixed together and sifted (see page 36).

Unprepared dressings may also be applied any time throughout the year, with the exception of the summer months, and consist of leaf mould, old potting soil, rotten turf, old hot beds, wood ashes, etc., sifted and scattered in the usual way. By this means the turf is sure to benefit, and the garden is rid of certain unsightly heaps.

Always turn over the heaps of soil several times before use, and sift top-dressings before spreading them on the lawn, if only to lengthen the life of the mowing machine. It is good policy to give a weedy or mossy lawn a thorough raking before applying the top-dressing.

SEA-SAND.

Sea-sand is frequently used as a dressing for Putting Greens, resting upon stiff soils, with the two-fold object of firming up the surface, and fining down a too vigorous growth of grass.

The sand must be applied with judgment, otherwise the grass may be smothered, and to reap its full benefits, the worms must be killed before it is applied, or they will quickly cover it with their casts, and no lasting improvement will be obtained. It is not advisable to use sand on poor hungry soils, as it contains little or no nourishment.

SOOT.

Soot is generally applied in the spring at the rate of $\frac{1}{2}$ bushel to a rod of ground, but beyond giving a bright colour to the grass, it does not do much good, as it contains little nourishment.



RECTORY FIELD, BLACKHEATH.



CRYSTAL PALACE ARCHERY GROUND.

Curters' Grass Seeds are used at the above, and by most of the leading sports clubs.

Curters, 237, 238, & 97, HIGH HOLBORN, LONDON.

CLAY.

Clay is rarely used for top-dressing lawns or greens, although "Nottingham Marl" is frequently used for top-dressing cricket pitches, to enable them to resist the pounding and hard wear to which they are subjected.

MANURES, ARTIFICIAL.

Artificial manures require careful handling. They do not act equally on all soils, and unless one quite understands what the manure consists of, and whether it is suitable for lawns, it is quite possible to get a very different result than that anticipated. A case in point: A gardener was advised to dress his lawns with bone dust, which he did. Before he applied the bone dust they were practically free from clover, but after the first application it at once asserted itself, and quickly overpowered the grass, greatly to the annoyance and wonderment of the man, who unknowingly had supplied the clover with just the food most suitable to its constitution.

It should always be remembered that the "grass" referred to in text books on manures is always grass as found in pastures or for hay, not lawn grass, and as coarse grasses and clovers are very valuable in hay fields and pastures, it is quite easy to see how a mistake can be made. An amateur should apply only such composts or artificials as are prepared by experts.

TURF.

The only point in favour of turf is that it looks well immediately it is laid, in fact it often looks better then than it ever does afterwards.

It is difficult to give the cost of turf, as the price of cutting, carting, and laying varies in almost every district. If we put it at £100 per acre, that is, about 15,000 turfs, 3 ft. long by 1 ft. broad, at 10s. per 100, £25 for laying, etc., this would be a low price, and in most cases it would be exceeded. Bought turf consists chiefly of coarse meadow grasses, clovers, and weeds, quite unfit to be used for a lawn. If turf is laid in the spring, it stands a very serious chance of being destroyed should hot or dry weather set in; or, if it does not absolutely destroy the turf, most of the finer and most valuable grasses will perish, leaving alive the coarse grasses, clovers, and weeds.

Turf must be laid during the autumn to get the best results; even then, it is the most expensive and unsatisfactory mode of making a lawn.

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NEWMARKET HEATH.



HURST PARK.

Carters' Grass Seeds are used at the above and most of the leading racecourses.

Carters, 237, 238, & 97, HIGH HOLBORN, LONDON.

We give below a rough estimate of the cost of seeding and turfing a $\frac{1}{4}$ -acre plot of land—the work being done in the autumn. The cost of preparing the land will be about the same in both cases, so that we will not include it at all.

3,750 turfs at, say, 10s. per 100	...	...	...	£18	15	0
For laying 3,750 turfs at 2s. per 100	...	...	...	3	15	0
				<hr/>	<hr/>	<hr/>
3 bushels of our finest grass seed at 30s. per bushel	...	...	...	£4	10	0
For sowing the same, say 5s.	...	...	...	0	5	0
				<hr/>	<hr/>	<hr/>
				£4	15	0

The balance in favour of the seed is £17 15s. In both cases the lawns should be fit for play by the following June. The turf plot would consist of all sorts and conditions of grasses, clovers, and weeds, and the seeded plot would consist of only the finest grasses obtainable.

THE SELECTION OF SEED.

It is most important that the lawn should be sown with a mixture of grass seeds that is particularly suited to its geological structure, consequently we are always anxious to personally inspect land, or at least to examine a sample of soil. To further this object we are prepared and pleased to send an expert on grass, to report upon land, lawns, golf-links, etc., charging his out-of-pocket expenses only. See announcement on page 2 of cover.

When we have a knowledge of the soil, we specially prepare a prescription likely to thrive upon it, which is more satisfactory to all concerned.

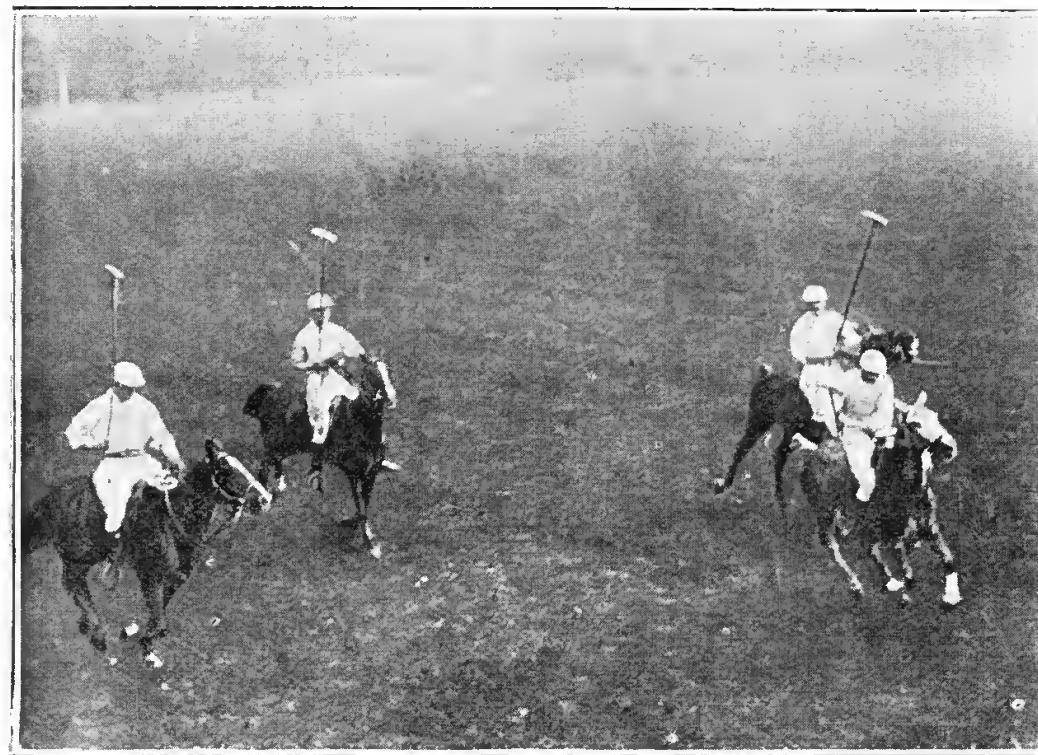
In cases where we have no knowledge of the soil, we send one of our standard prescriptions suitable for a medium soil. We divide these into two classes, and designate them "Finest" and "Fine," at a cost of 30s. and 25s. per bushel respectively. The "Finest" class consists of only the very best perennial dwarf grasses; this we recommend for putting and bowling greens, croquet, tennis, and pleasure lawns, etc. The "Fine" seeds consist of slightly coarser growing varieties, which thrive well in confined spaces, in the vicinity of towns, and on soils of a retentive nature.

We never add clover to these prescriptions unless specially ordered to do so. A small quantity of clover is not objectionable in a pleasure lawn, but we consider it a positive nuisance in a lawn devoted to games, as it gives a patchy appearance to the turf. It is slippery and becomes pulped under hard wear, it holds the dew longer than grass, it discolours the balls, and often diverts a "true" ball.

All the finest growing grasses that are most suitable for the formation of a lawn are very shy seeders; that is, when grown for seed they yield less weight



A LADIES' DRIVING COMPETITION AT RANELAGH.



POLO AT RANELAGH.

Carters' Grass Seeds are used at the Ranelagh Club.

Carters, 237, 238, & 97, HIGH HOLBORN, LONDON.

per acre, as is only natural, than do the coarser growing varieties; consequently, the cheaper the mixture the coarser the turf. This can readily be understood, as grass seed costs from 6d. to 3s. per pound to produce, according to variety. We also prepare and supply prescriptions consisting of fine and coarser growing grasses in proportion, at the rate of 17s. 6d. to 25s. per bushel. These are really serviceable mixtures, and are suitable for recreation grounds, football grounds, race-courses, &c., and small places where a very fine turf is not so necessary. But we maintain that the finest dwarf growing grasses are the most economical in the end, especially when used for sowing down large areas, as the turf formed by the dwarf compact habit of the finest grasses requires to be mown only about half as many times as a turf formed by coarser growing grasses. It would be interesting to compare the mowing bill of a good seaside golf links, or Walton Heath, with that of an ordinary inland links. This is a most important point, especially when one takes into account the large sums of money annually spent on mowing, and an independent investigation would undoubtedly prove that our method of sowing down land with the finest grasses gives the best results and is the most economical.

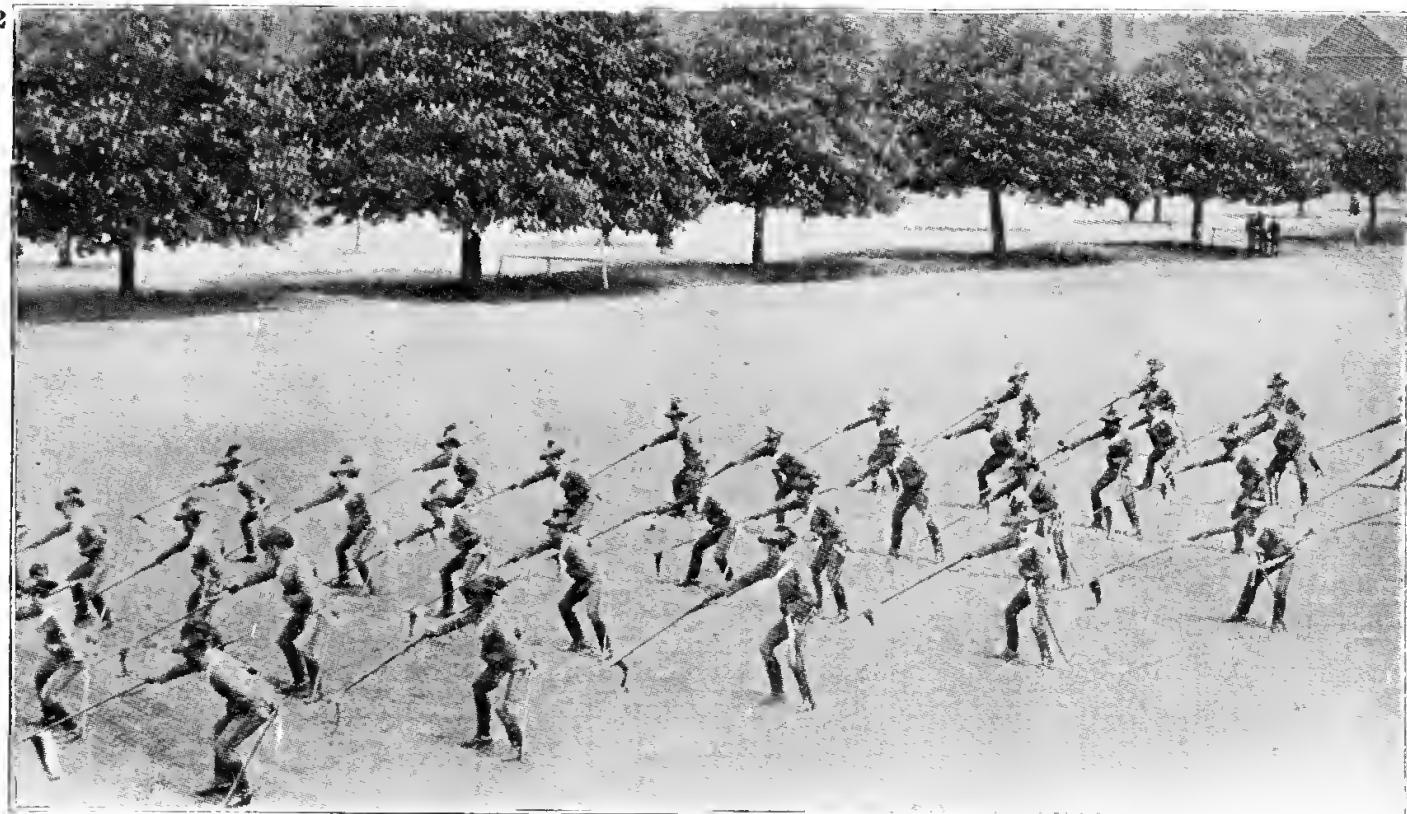


ORDINARY LAWN GRASS.

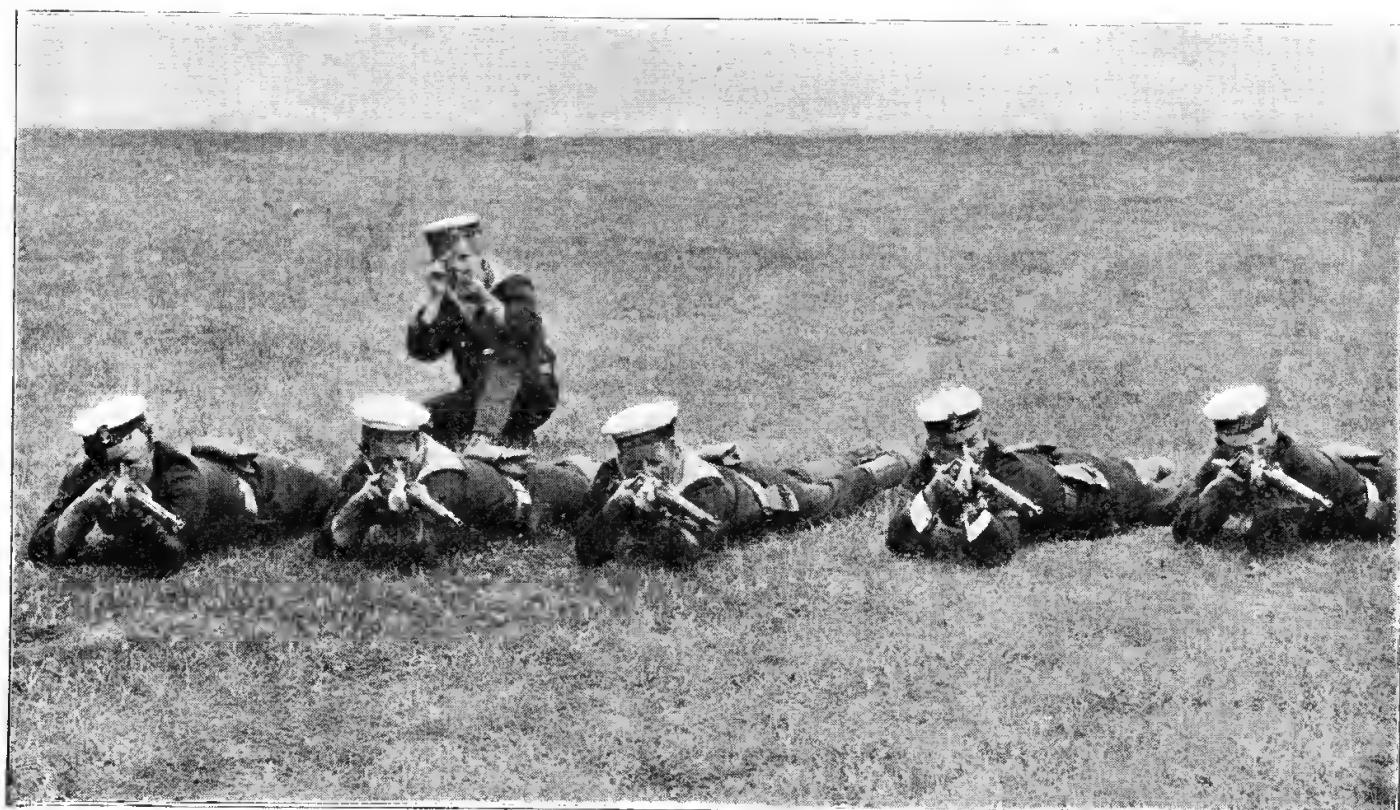
CARTERS' FINEST LAWN GRASS.

Comparative examples of grasses that have not been cut.

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ALDERSHOT.



BISLEY.

Carters' Grass Seeds are used by the Admiralty and War Department.

Carters, 237, 238, & 97, HIGH HOLBORN, LONDON.

BIRDS.

Sparrows are the chief offenders under this heading, and they undoubtedly do serious damage to newly sown lawns, especially around big towns, where they seem to thrive to a remarkable degree. The best mode of scaring them is to use a gun; but this entails early rising, as the sparrows take their breakfast at sunrise. A small lawn can be successfully protected by stretching garden netting over it, or by the liberal use of pegs and black thread, the thread to be stretched tight from peg to peg, and to be about 4 ins. from the ground. Pigeons are also a source of trouble, as they eat the coarse weed seeds found in hay lofts, and these are dropped about the lawn in their excrement.

MOWING.

Cut the young grass for the first time when it is about 2 ins. high with a sharp scythe. For safety's sake it is advisable to cut it once or twice more with a scythe, so as to allow the young plants to become sufficiently strong to resist the slight snatching movement of the mowing machine.

Never allow the grass, whether it be young or old, to grow long and ragged. Two inches may be considered the extreme length to which it should attain at any time of the year. It is not advisable to keep grass too closely cut during hot and dry weather.

If a lawn be free from weeds, and is kept closely cut, the machine can be used without the box; the cut grass will not be very noticeable, and will afford the roots of the grass a certain amount of protection during hot and dry weather.

This must not be practised on weedy lawns, as the machine would cut off and scatter the weed seeds all over the lawn; whereas, were they collected in the box together with the cut grass, they would be removed and destroyed.

MOWING MACHINES, A FEW HINTS ON.

In the first place buy a good one, avoiding all cheap foreign-made machines, as they are often made of soft metal and are generally very disappointing.

We have, ourselves, used for a great many years machines made by Messrs. Ransomes, Sims, & Jefferies, Limited, of Ipswich, and can confidently recommend them as being of excellent make and material.

Sweep the lawn before cutting; this removes stones, worm casts, rubbish, &c., which would blunt the knives.

Oil the bearings, the edges of the knives, and ledger blade with best "sperm" or olive oil, every time before using the machine.

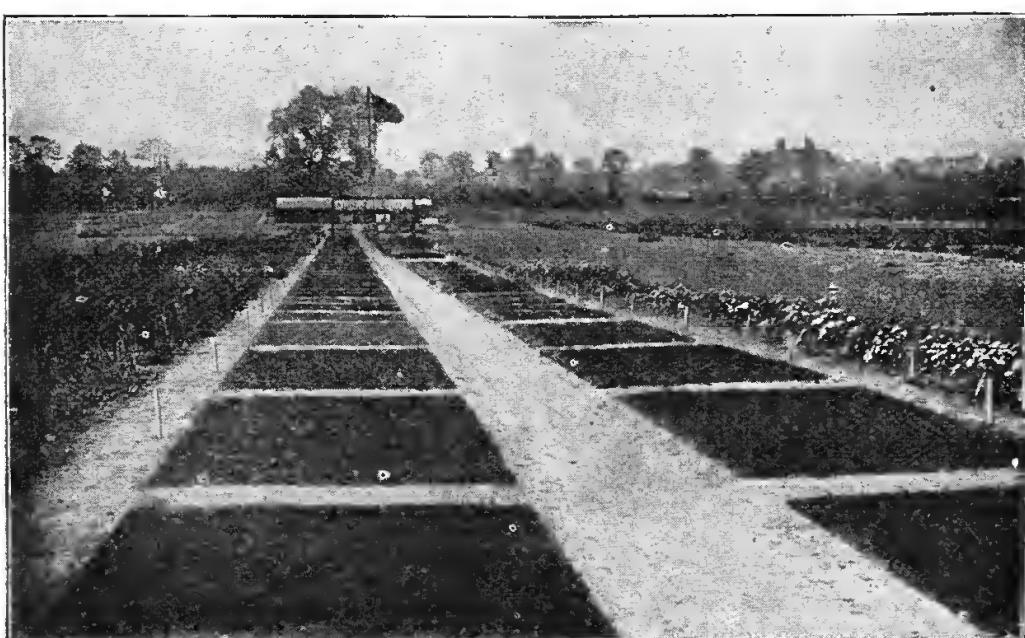
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*Carters' Grass
Seeds are cleaned
by specially con-
structed machi-
nery;*



*Examined by our
resident certifi-
cated botanical
analysts;*



*And tested be-
fore being used
for orders.*

*Carters
237, 238, & 97, HIGH
HOLBORN, LONDON.*

Wipe off with cotton waste any old or dried-up oil, and free the oil holes ; this enables the new oil to reach the working parts.

Set the knives carefully, according to directions.

The knives when set properly should revolve freely, and cut a piece of note-paper held between them quite easily at any part of the blade.

If set too tight the machine will draw heavily.

Keep the knives sharp according to the directions sent out with the machine, and after using the machine give it a good cleaning and greasing before putting it away in a dry place.

A month's free trial is allowed on all Mowing Machines.

NURSERIES FOR TURF.

All go-ahead clubs should have a turf nursery, which is made and used as follows :—

Prepare two plots of ground, sow them down and keep them in exactly the same way as the greens or courts are kept. They will make two pieces of excellent turf, which will be found very useful during the autumn or spring for repairing bare or weak places in the greens or courts. When one plot is cleared level it up and sow it again and use the second plot. In this way a continued supply is available at very little cost during all seasons.

ROLLING.

Grass will not thrive on a loose surface. After the grass has been cut for the first time, the whole surface must be carefully rolled with a light roller ; this should be repeated after each cutting, until the turf is strong enough to bear a heavier implement.

Too much rolling is not recommended at this stage. Do not roll always in the same direction ; roll from north to south one day, and from east to west the next, and so on. Do not roll when the ground is hard and dry, as it will do no good, or during frosty weather, when it will do serious damage, but roll frequently during the spring and autumn. A wooden roller, made up in segments, will be found a useful tool for land that requires frequent rolling, such as putting greens, tennis and croquet courts. The best metal rollers are made with two cylinders to facilitate turning, and the outside edges are rounded, to prevent them from cutting the turf.

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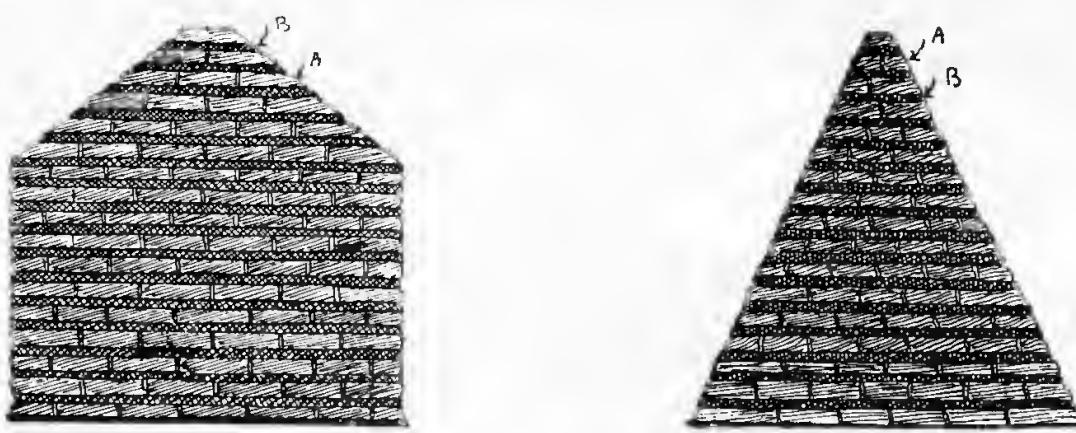
MOSS.

This is a sure sign that the soil is out of condition, and is generally caused by poverty, or the want of proper drainage.

It is generally safe, and always less expensive, to assume that it is caused by poverty, and to eradicate it by following the directions on renovating (see page 6), unless there is very strong evidence to the contrary, when it will become necessary to follow the more expensive directions on drainage.

MANURE STACKS.

How to Prepare Dressing Composts.



A represents layers of turf placed grass-side downwards, good light soil, sea sand, leaf mould, etc.

B represents layers of manure—cow, farmyard, stable, peat moss, etc.

WEED SEEDS IN SOIL.

Very frequently freshly dug land and imported soil will produce a strong crop of weeds, both annual and perennial. How the weed seeds get into the soil, and how long they will retain their germinating power is a debatable matter into which it is not necessary for us to enter. Darwin tells us that seeds which germinated freely have been found in the little chamber at the end of a worm hole, at a depth of 8ft. In his opinion these seeds were taken down the holes by the worms, with the object of lining the little chamber in which they winter in a dormant condition, so as to prevent their skins, through which they breathe, from coming into contact with the cold, damp soil.

There are a multitude of different ways in which weed seeds get into the ground, and the only way of making a good lawn upon foul ground is to allow it to lay fallow, and clean it by frequently disturbing the surface with a hoe for a small plot, and a harrow for a larger area.

WEEDS—CLEANING LAND.

This we will divide into two parts, cleaning freshly dug land and cleaning existing turf.

We always advise our customers to prepare the ground for a new lawn or green as long before the next seeding season as possible. This not only improves the soil and allows it to become consolidated naturally, but it gives an opportunity, which should not be lost, of freeing the land of the majority of the weeds that it may contain. As soon as the weeds appear hoe them down, but do not hoe deeply, as this will bring to the surface weed seeds which otherwise would be buried too deeply to grow.

WEEDS—CLEANING TURF.

Any annual weeds that may have escaped the hoeing will be extirpated by the mowing machine, so we can dismiss them from our minds. This leaves us the perennial weeds, which we will divide into three classes, as follows:—(1) Weeds with a long tap root, such as dandelions, docks, and certain of the rib grasses; (2) weeds with roots like a tassel, such as plantains, hawkweed, &c.; (3) weeds which travel above or below the surface, throwing out new roots and growth every few inches, such as daisies, yarrow, and some of the clovers.

We cannot impress on the minds of our readers too strongly the advisability of weeding systematically. Divide the lawn into strips about 3ft. wide, by means of string and pegs, and thoroughly clean one strip before going on to another. It is almost incredible how quickly a lawn can be freed from weeds in this manner. Meandering about a lawn with a spud in one hand and a basket in the other is a laborious and ineffective way of weeding a lawn, as a number of weeds are bound to be missed.

TAP-ROOTED WEEDS.

To free a lawn from tap-rooted weeds, divide the lawn into strips about 3ft. wide, take a Sussex trugg basket to hold the weeds and a border fork with four flat prongs. Now to remove the weed successfully it is necessary to guess the depth of the root. Well-grown dandelions and docks will go down over a foot, the smaller ones and the rib grass about 6ins. In the first case, force the fork into the turf as deep as it will go, and as far from the weed as the length of the prongs. By depressing the handle of the fork the turf will be forced up like a mole hill. If the distance has been guessed correctly it will crack on either side of the weed, which can then be removed easily. In the case of the smaller weeds, force the

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fork into the soil about 6 ins. from the weed and about 6 ins. deep, and go on as before. After a little practice it is possible to take out weed after weed without breaking or leaving behind any of the root, which if left might grow again. It is best to weed in this fashion when the soil is damp. Before rolling down the "mole hills" drop a pinch of seed into the hole left by the weed. Forking up the turf in this way tends to improve it. Removing the crown of a tap-rooted weed with a knife does more harm than good, as in most cases the weed will throw out several crowns to replace the one cut off. Always burn weeds, then you know for certain that they cannot give any more trouble.

TASSEL-ROOTED WEEDS.

Divide up the lawn as before, and take up your position, seated upon a low stool about 8 or 9 ins. high, with your legs well forward and apart, so that you can work in between them. Remove the weeds by forcing into the soil a 1-in. chisel (this is by far the most effective tool to use) about $1\frac{1}{2}$ to 2 ins. away from the weed, and about the same depth. By depressing the handle of the chisel the soil will be forced up into a little mound. Take the weed with the left hand, give it a slight shake, and out it comes. When all the weeds in reach have been removed, by placing the right hand on the turf your weight can be removed from the stool, which is then pulled forward with the left hand.

Finish off each strip by sprinkling seed into the holes and rolling down. Burn the weeds.

CREEPING WEEDS.

These are by far the most difficult to exterminate, as in most cases a portion of the root left in the soil will grow freely, and it is most difficult to remove entirely a weed of this class in a thick turf.

The most successful means we have employed up to date is a preparation we call "Carters' Weed Crystal," which is used as follows: For small isolated weeds, place a thimbleful of the preparation on the crown of each weed. For large clumps of daisies sprinkle the clump liberally with the preparation on a dry day, so that the whole force of the "Killer" eats into the crown. This preparation, which is really a manure beneficial to grasses, when applied in this manner, will in a few days scorch up and kill the weeds, and when by the action of the weather it loses its potency, it will, unless the clump of weeds was very large, stimulate the surrounding grass to such an extent that the scar left by the weed will quickly disappear. The preparation will also kill other weeds if used as

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follows: Cut off the crown of the weed about 1 in. from the surface, and place a pinch of "Carters' Weed Crystal" upon the stump. Although this is very effective we cannot see that it has any advantage over removing the weeds by hand.

Clovers and grasses obtain their nourishment from different constituents of the soil; our Complete Grass Manure is made up to stimulate grasses only, consequently a lawn containing clover and other fleshy plants will quickly improve if dressed with it, as it is calculated to strengthen the grass to the detriment of the clover.

A lawn infested with creeping weeds can be improved to a very large extent by raking it thoroughly during the spring or autumn with an iron-toothed rake; the action of the rake will break up and tear out a large quantity of weeds, which should be collected and destroyed, especially if the raking is done in two different directions. A lawn subjected to this treatment should always be seeded where necessary and top-dressed.

WATERING GRASS.

YOUNG TURF.—It is not always good to water young grass before it has become firmly established, as the force of water, either from a hose or watering can, disturbs the soil, and damages the young and tender plants. If the seed is sown at the right time, that is, as soon as possible after the break up of the summer (say, early September) or spring (say, during March), it may not be found necessary to water it until it is amply strong enough to be able to withstand it, but one should always remember that drought is the worst enemy of young grass plants; a week of hot, dry weather will do ten times more harm than a month of frost.

ESTABLISHED TURF.—Use a hose or watering can, fitted with a fine rose. Distribute the water evenly over the lawn, giving it sufficient to go down to a depth of 6 inches.

Water late in the afternoon, or, better still, in the evening. Do not water under a hot sun, as it will quickly evaporate, and cause the soil to bake.

A lawn that has been regularly watered during the summer should be top-dressed in the autumn.

FAIRY RINGS.

These are caused by a fungoid growth, the spores of which may have been deposited on the lawn by the wind.

The mycelium spreads underneath the turf, and as it exhausts the constituents of the soil which are necessary for its existence it expands on all sides, as a ring

does over the surface of a pond which has been caused by the impact of a stone with the water.

As the outside edge of the ring flourishes, the inside decays ; this charges the soil with nitrogenous matter, and causes the grass to assume a very dark green colour.

As far as we know, the only cure for fairy rings is to bodily remove them, burn the earth taken out, and fill in with fresh material.

When removing a fairy ring, do it properly. Cut the turf and soil well away from either side of the ring, making the trench from 18 to 24 ins. wide, and about the same depth. As the fungus gives out a very offensive smell, by occasionally smelling a handful of soil one can readily tell if it is necessary to remove any more soil. Give the sides and bottom of the trench a liberal dusting with quick lime, allow the trenches to remain open for a few days, then fill them with sweet soil, ram it well in, and sow with grass seed.

The contaminated soil must on no account be allowed to touch the lawn, but must be carefully removed, mixed with quick lime, and allowed to stand in a heap for a few months, turning it over as frequently as possible. The action of the lime and air will sweeten the soil, which may then be used on the borders of the garden, but not on the turf, for fear of accidents.

SHEEP.

Advantages and Disadvantages.

Sheep, under certain conditions, will manure the grass, keep it short, and by constantly moving about, help to give the turf a firm surface ; this assists in saving expense of cutting, rolling, and manuring.

Sheep may be grazed in the spring and early summer, providing they are cake or artificially fed ; breeding ewes are seldom given much cake or roots till they have lambed. If not cake or artificially fed, sheep do little good other than keeping the grass short.

Sheep, even on old pastures, are apt to pull out the small grass rootlets. They should not be allowed on new grass under any circumstances until it is ascertained that the roots are strong enough to resist being lifted.

The droppings from the sheep are always more or less an inconvenience to those playing on a golf green, and in the dry weather sheep scalds are very frequent.

To sum the matter up briefly, if proprietors do not mind the expense of cutting, rolling, and manuring, we see no reason why sheep should be introduced. We have explained the only good they can possibly do under the best circumstances ; while, if not cake fed, they may impoverish the land, and in any case are more or less a nuisance on grass that is being played upon, particularly on a putting green. On a garden lawn or similarly confined space their presence would be impossible.

SHADED LAWNS.

Shaded lawns are perhaps the most beautiful of all lawns, but unfortunately the most difficult to keep in condition, for these good and sufficient reasons:—

The roots of the trees absorb all the moisture and nutriment from the soil within reach, the foliage shields the ground from rain, dew, and light, and in winter the rain collects on the branches and falls in destructive drips; consequently, the ground beneath a tree is generally poverty-stricken, dust dry for the greater part of the year, and as hard as a board.

If the branches do not reach within six feet of the ground the turf beneath a tree may be kept in good order, provided that it is frequently top-dressed during spring and autumn, and seed scratched in when necessary (see page 6), and that the turf actually shaded by the tree is given copious supplies of water during dry weather.

Liquid manure, either artificial or natural, may be used with good effect. It is always more difficult to grow grass under evergreens than it is under trees which lose their foliage every year, and it is practically impossible to grow grass beneath trees when the branches reach the ground. Then, again, the scales and spines that drop from some resiniferous trees absolutely poison the ground.

Grass seeds most suitable for sowing under trees are offered on page 35.

PUTTING GREENS.

Putting greens should consist of a very fine dense and uniform turf. Weeds should not be permitted to exist in them.

To get greens into good condition and keep them up to the mark is really a work of art, especially when one takes into consideration the varying conditions under which they are expected to flourish. One may face the north, another the east, one may be on high ground, another on low ground, one is too wet, another too dry, one is on good soil, but most are on poor soil, and all are expected to be in good play practically all the year round.

Consequently, when making a green, do it well; do not stint anything, either in quality or quantity, in labour, manure, or seed, and when a green is in good condition keep it in good condition by continually freeing it from weeds and keeping the turf up to the mark, by top-dressing it as frequently as possible, and constantly repairing weak or bare places with turfs taken from the nursery.

Should your greens show signs of deterioration, write to us; do not wait until they are quite spoilt, we may be able to help you—see front cover.

SEED SOWING MACHINES.

These machines, which were invented by our firm, are specially constructed to sow grass seeds over large areas at rates varying from 6 to 12 bushels per acre. An experienced man can, with the help of a machine, sow from 3 to 4 acres a day, sowing the seed evenly and at the desired rate per acre without waste.

The advantage of using a machine over hand sowing is this: the machine saves time, sows the seed evenly and well, does not waste seed, and can be used with success on days when the wind would make it impossible to sow by hand. We are always pleased to loan a machine when large areas are to be sown, charging carriage on the machine only, unless an expert is sent with the machine to supervise the sowing, when his out-of-pocket expenses will be charged also.

Having only a limited number of machines, an early application should be made to avoid disappointment, as the machines are frequently booked in advance.

Only City Address: 53A, QUEEN VICTORIA STREET, E.C.



WALTON HEATH GOLF LINKS.

The entire Course, Greens, and Tees were sown with Carters' Tested Grass Seeds in September, 1903, and the Links were formally opened on May 14th, 1904.

Reports of the *News of the World* Tournament played at Walton Heath, October, 1905:—

Golf Illustrated.—“The course was in extremely fine condition, and may be aptly described as an inland St. Andrews, and the good golfer who plays on it need never sigh for a seaside links.”

Daily Telegraph.—“The course, which bears an extraordinary resemblance to a seaside links, especially in regard to the nature of the turf, was in perfect order.”

The Standard.—“The money spent to clear the course through the bracken and heather has resulted in a wide pathway of turf fit for a champion lawn tennis tournament.”

Sunday Times.—“It is a grand course, and the nearest approach to a seaside links that I have ever seen inland.”

Note.—The entire course, greens, and tees were sown with Carters' Finest Grass Seeds.

Carters, 237, 238, & 97, HIGH HOLBORN, LONDON.



ONE OF THE PUTTING GREENS MADE AND SOWN DOWN BY OUR FIRM ON THE
WALTON HEATH GOLF CLUB.

We had the honour to receive the following unsolicited Testimonial from W. Herbert Fowler, Esq., President of the Club:

"21st December, 1903.—Now that the time has come when the work entrusted to you by the Walton Heath Golf Club is finished, I write to convey my thanks to you for the admirable way in which you have carried out a most difficult and almost new task. **You have converted a waste of heath and furze into a first-class 18-hole golf links**, and produced a splendid turf 'through the green' and putting greens which promise to rank with the best in the country. All this has been carried out in the short space of 16 months, and I am convinced that it has been done at a minimum of expenditure. I trust this will not be your last undertaking of this nature, as I am certain no other firm could have produced so good a result. I wish also to convey my personal thanks to all the members of your firm for their uniform courtesy and consideration. I regret that our joint task is over, and shall always remember our connection with much pleasure."—(Signed) W. HERBERT FOWLER, Walton Heath Golf Club, Walton-on-the-Hill, Surrey.

NOTE.—We cleared, ploughed, and sowed the whole of the 18-hole course and putting greens with the finest Grass Seeds, laid water on to all the greens, and made roads, &c. Not a square foot of turf was employed. We believe this to be the first golf course sown entirely with grass seeds, and in perfect condition for play within 16 months.—J. C. & Co.

EASTBOURNE.—We sowed **10 acres** on the course, and **38 acres** surrounding the new nine holes of the Willingdon Golf Club, Eastbourne, in September, 1903. This was most successful, and was in full play by the following August.

CROMIER.—We sowed **7 acres** for the Royal Cromer Golf Club in April, 1904. This, when inspected in September, proved to be a magnificent piece of turf.

CASTLETON, Isle of Man.—We supplied grass seed for **6 acres** to the Castletown Golf Club.

WINCHESTER.—We sowed a new cricket field of **3½ acres** at Winchester College.

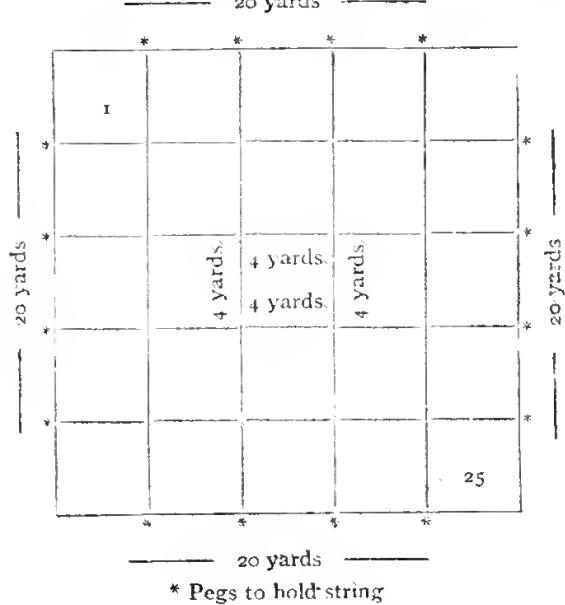
BERKSHIRE.—We are now engaged in making an **8-acre** Cricket Field at Bradfield College.

HERNE BAY.—We have made arrangements for seeding down **30 acres** of ground for the Herne Bay Golf Club.

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A SIMPLE GROUND PLAN.



HIS MAJESTY THE KING AT BISLEY CAMP, 1905.

Carters' Grass Seeds have been used here for many years in forming a turf on the poor heathy soil.

Carters' Grass Seeds are also used on the estates of His Majesty the King at Windsor and Sandringham.

AMOUNT OF SEED TO SOW.

One bushel of seeds weighs 25 pounds. The ground should be divided into squares of 4 yards each way, or 16 square yards (see Diagram), and the seed required for that area should not be less than 1 pound, which is at the rate of 1 bushel of 25 pounds to an area of 20 yards each way, or 400 square yards.

EXPLANATION OF DIAGRAM.

A plot 20 yards each way, or 400 square yards, ready for sowing, marked out with string into 25 squares of 4 yards each way, or 16 square yards.

PRICES OF CARTERS' GRASS SEEDS.

Carters' Grass Seeds are used on the estates of His Majesty the King at Windsor and Sandringham, and also supplied to LORO'S, THE OVAL, NEWMARKET, WIMBLEDON, ALL-ENGLAND TENNIS GROUNDS, WALTON HEATH, and most of the leading Golf Clubs in Great Britain.

GRASS SEEDS PRESCRIBED FOR ALL SOILS AND PURPOSES.

For Lawns.	For Putting Greens.
For Recreation Grounds.	For Town Lawns.
For Cricket Grounds.	For Tennis Courts.
For Croquet Grounds.	For Under Trees.
For Shaded Lawns.	For Archery Grounds.
For Bowling Greens.	For Football Fields.
For Polo Grounds.	For Racecourses.
For Golf Courses.	For Cricket Pitches

Please state for what purpose the grass seed is required, whether for an ordinary Lawn, Croquet, Tennis, Putting Greens, Through the Course, &c., and whether to form **new turf or renovating existing turf.**

CARTERS' FINEST GRASS SEEDS.

As supplied to His Majesty's Golf Grounds and other parts of the Royal Estates. A mixture of the very fine bladed species, which, if sown according to our recommendations, should produce a close thick turf on all good soils, and is especially suitable for all games in which the ball is required to run true.

Price, **30s.** per bushel of 25lb.; **16s.** per half-bushel; **1s. 6d.** per Parcel Post lb.

CARTERS' FINE GRASS SEEDS.

Fine Grass Seeds.—A prescription adapted for cold and ungenerous soils, or for any confined situation. A very useful mixture, but not quite so fine as the above.

Price, **25s.** per bushel of 25lb.; **14s.** per half-bushel; **1s. 4d.** per Parcel Post lb.

For particulars of quantities to sow over certain areas, see opposite page.

Carters' Grass Seeds for Golf Links.—Our experience in sowing down golf links (through the green) and putting greens is probably unique. In autumn, 1903, we sowed a complete course which was ready for play 1904 (see testimonial on page 32). Our price for Grass Seeds for "through the green" ranges from **17s. 6d.** per bushel to **30s.** per bushel, according to the texture of grass desired and the time the links are required for play.

Carters' Grass Seeds for Recreation Grounds, Race Courses, and other Open Spaces. We prepare mixtures of hard-wearing grass suitable for this purpose at prices varying from **17s. 6d.**, **21s. 6d.**, to **25s.** per bushel.

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CARTERS' FERTILISING FIBRE.

This material, which is a combination of fibre and manure, in cold weather protects the young grass rootlets from frost, and in warm weather assists in conserving moisture besides acting as a manure. It should be applied to a thickness of about $\frac{1}{4}$ of an inch, or at the rate of two bushels per 16 square yards after the growth is well above ground—say, about five weeks after seeding.

Price, in sealed bags of 5 bushels, per bag, **7/6**; per five bags, **32/6**; per 10 bags, **60/-**. **Carriage Paid.**

Ten bags will dress a full-sized croquet or tennis lawn, or a large green, containing about 800 square yards of turf. Five bags will dress a regulation croquet or tennis lawn, a bowling green, or an average-sized putting green, containing about 400 square yards of turf.

CARTERS' COMPLETE GRASS MANURE.

Should be sprinkled over the grass in autumn or spring, during showery weather, at the rate of 2 oz. per square yard, mixed with three times its own bulk of well-sifted mould of sand, according to the composition of the existing earth—a heavy clay would be improved with sand, while a sandy soil would be improved with rich loam.

Price: 14 lb., **4/6**; $\frac{1}{4}$ cwt., **7/6**; $\frac{1}{2}$ cwt., **12/6**; 1 cwt., **21/-**; 5 cwt. at **19/-**; 10 cwt. at **18/-**; 1 ton at **17/-** per cwt. **Carriage Paid.**

112 lb. will dress a full-sized croquet or tennis lawn, or a large putting green, containing about 800 square yards of turf. 56 lb. will dress a regulation size croquet or tennis lawn, a bowling green, or an average-sized putting green, containing about 400 square yards of turf.

CARTERS' WEED CRYSTAL (Daisy Killer).

DIRECTIONS FOR USE.

SMALL ISOLATED WEEDS.—Place a pinch of the preparation on the crown of each weed.

LARGE WEEDS.—Cut off the crown of the weed about 1 inch below the surface and place a pinch of the preparation upon the stump.

LARGE PATCHES OF WEEDS (such as daisies).—Sprinkle the stump liberally with the preparation on a dry day.

Price: Tins, **1/-**, **2/-**, and **3/-** each; 14 lb., **5/-**; 28 lb., **8/6**; 56 lb., **12/6**; 1 cwt. **21/-**

LAWN SAND.

2 to 4 oz. per square yard, tins **1/-**, **2/6**, and **5/6** each; 28 lb., **9/6**; 56 lb., **18/-**; 1 cwt., **34/-**

Carters, 237, 238, & 97, HIGH HOLBORN, LONDON.

To play this fashionable game effectually it is of the utmost importance that the surface should be as level as a billiard table, as the real science of the sport lies in the fact of being able to play a ball "true," and to ensure this the grass must be short and firm, without clover or any thick-leaved weeds likely to balk its course. A croquet lawn should be about the same size as a tennis court. See page 38.

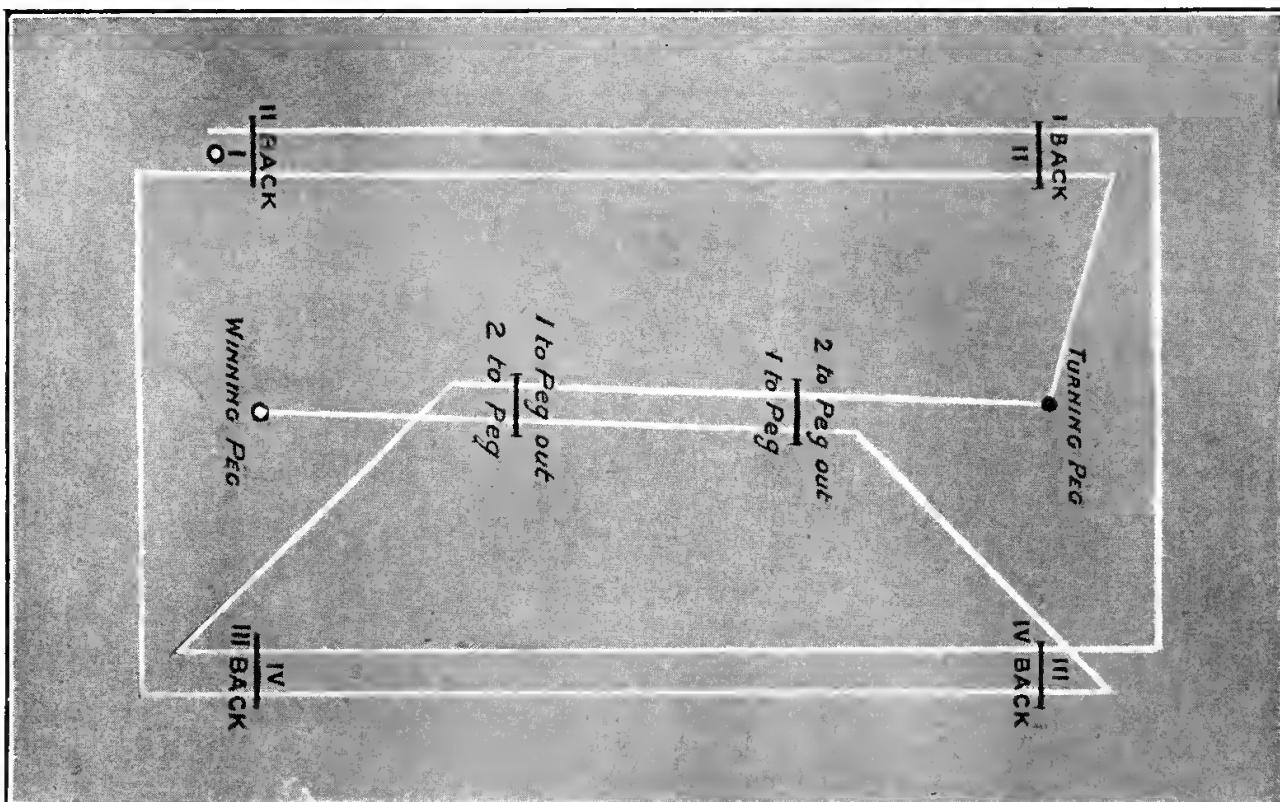


DIAGRAM OF A CROQUET COURT.

**Hints on the Upkeep of Croquet, Pleasure, and other Lawns
during the Winter Months.**

SEPTEMBER.—Remove all weeds, pay special attention to the level of the lawn (remove the turf, add or take away soil as is requisite, replace turf and stamp down) and renovate the whole lawn if necessary with grass seeds, or—

Top dress the lawn with either prepared compost or Carters' Complete Grass Manure, using for a large lawn from 12 to 16 barrows of well sifted compost, or from 12 to 16 barrows of good light soil, mixed with 1 cwt. of Carters' complete grass manure. For a regulation court one half of the above will suffice.

OCTOBER TO MARCH.—Roll and cut when necessary, do not allow the grass to grow long and ragged during a mild winter.

APRIL.—Give the lawn a light top dressing, roll, cut, and generally prepare it for play.

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LAWN TENNIS.

A tennis court should run from north to south, in preference to east to west, as in the latter case the setting sun is very troublesome to the players. The total area of land required for a full size tennis court is 120 ft. by 60 ft. This allows a run back of 21 ft. beyond each service line and 10 ft. beyond each side line; without this extra margin fast play is impossible. The amount of grass seeds necessary for the full area would be two bushels; but for a tennis lawn of the regulation size, 78 ft. by 36 ft., only one bushel of grass seeds is needed.

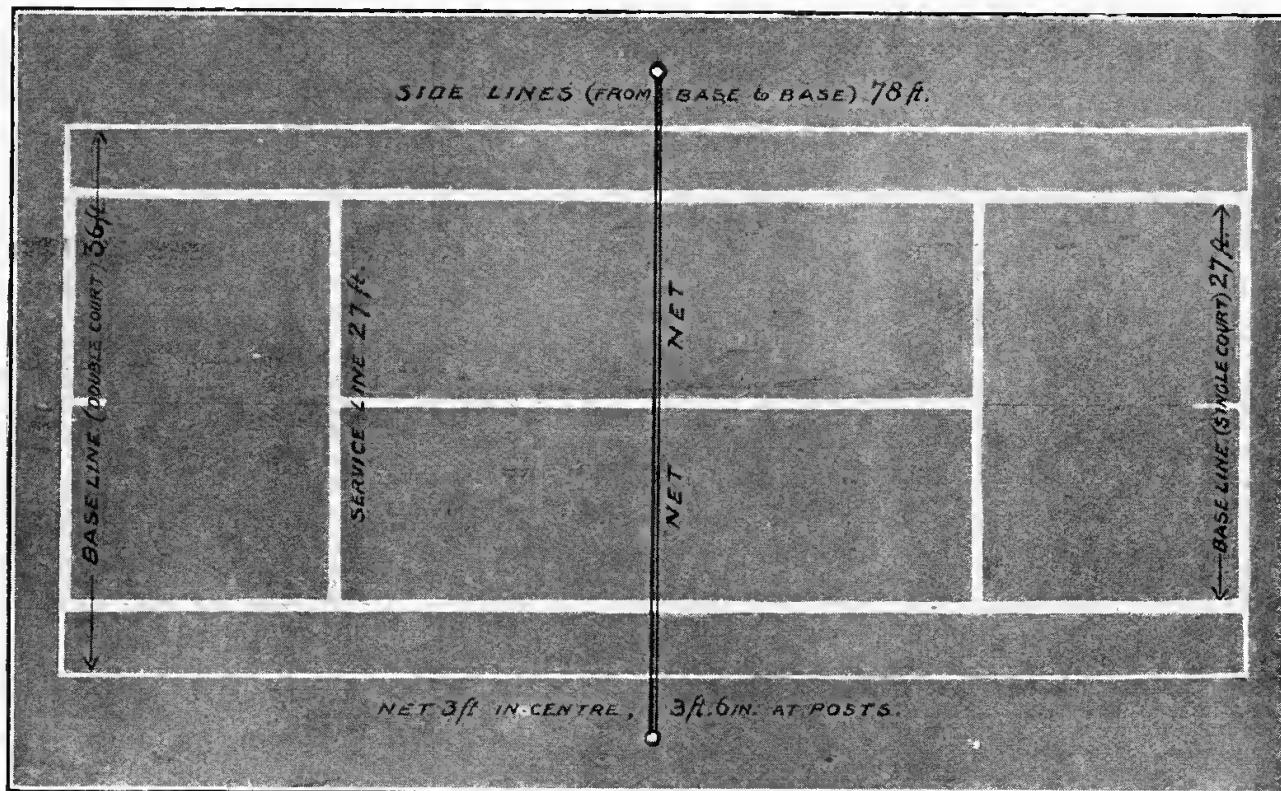


DIAGRAM OF A SINGLE COURT.

Hints on the Upkeep of a Tennis Lawn during the Winter Months.

SEPTEMBER.—Remove all weeds and correct the level of the court. Renovate the whole lawn if necessary with grass seeds, and patch the base line, or—

Top dress the lawn with either prepared compost or Carters' Complete Grass Manure, using for a large lawn from 12 to 16 barrows of well sifted compost, or from 12 to 16 barrows of good light soil, mixed with 1 cwt. of Carters' complete grass manure. For a regulation court one half of the above will suffice.

OCTOBER TO MARCH.—Roll and cut when necessary, do not allow the grass to grow long and ragged during a mild winter.

APRIL.—Give the lawn a light top dressing, roll, cut, and generally prepare it for play.

Carters, 237, 238, & 97, HIGH HOLBORN, LONDON.

WORMS IN PUTTING AND OTHER GREENS.

By PETER W. LEES,

Greenkeeper to the Mid-Surrey Golf Club, Richmond.

To keep a putting green in good playing condition all the year round, the grass must be kept in as clean and healthy a condition as possible, and the surface must be firm and true.

It is practically impossible to achieve this result on greens infested with worms. The very action of the worms continually throwing casts keeps the surface soft, and the daily brushing and rolling which is required to make the green at all playable tends to destroy the finer grasses, and in the course of time they disappear and give place to coarse tufts and bare places.

We all know the discomforts of playing on "wormy" greens, and I think it is pretty generally recognised that the worms must be removed if good greens are required; and the question arises, How are we to get rid of the worms without injuring the grass?

Some people say, "If you kill out the worms you will surely at the same time kill your turf"; but my answer to this is, come and see my putting-greens at the Mid-Surrey, where I have killed out all the worms, and I have at the present time, November, some of the finest turf to be seen anywhere, as it is clean, close, and firm, and plays as well as it did during the summer.

I treated several of my greens over a year ago, and they are to-day quite free from worms, and not only have they been in constant play ever since, but they will be played throughout the winter, without a rest and practically without brushing and rolling.

There are several cures for removing worms from greens, and I think I have tried them all now, but at last I have got a real effective one in Carters' Worm-Killer. It is the simplest, safest, and most efficient cure I have tried.

There is not the slightest danger of harming the turf, no matter how you use it; and that, I think, is a great point in its favour, as there are certain cures which are no doubt harmful to the worms, but at the same time damage the turf, which makes the cure worse than the disease; and, again, some are deadly poisons. Now, if Carters' directions are carefully carried out, there is not

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the slightest fear but that it will do its work in a thorough manner. But it is most important to choose a mild, dull, muggy day, when the ground is wet, and to ascertain that the worms are working near the surface before using the powder, as it is no use trying to kill worms if they are deep in the ground; it would only be wasting time and money.

The following interesting photographs were taken during the actual operation of cleaning a green:—

No. 1.—A portion of the putting green, taken in the morning, which clearly shows the worm casts, and the enormous difficulty there is in licking 18 "wormy" greens into shape every morning.

No. 2.—The men sowing the powder carefully over the surface of the putting green.

No. 3.—The most important part of the work, watering the powder in. Use as much water as possible, so that the powder in solution may quickly run down the holes and get in touch with the worms at once. Where water is laid on to the greens, the nozzle of the hose should be held as shown in the photograph, pointing straight down, so that the water is forced into the worm holes, when it is quite impossible for them to escape. If the water is not laid on, fill several tubs or barrels, and place them near to the green, so that the water can be applied quickly with pails or cans. Of course, the nearer the worms are to the surface the less water is required.

No. 4.—The worms coming to the surface about 2 or 3 minutes after the powder was watered in.

No. 5.—The same piece of ground about 5 or 10 minutes later.

No. 6.—One of the three barrow loads of worms taken from the green, a sight that must be seen to be believed.

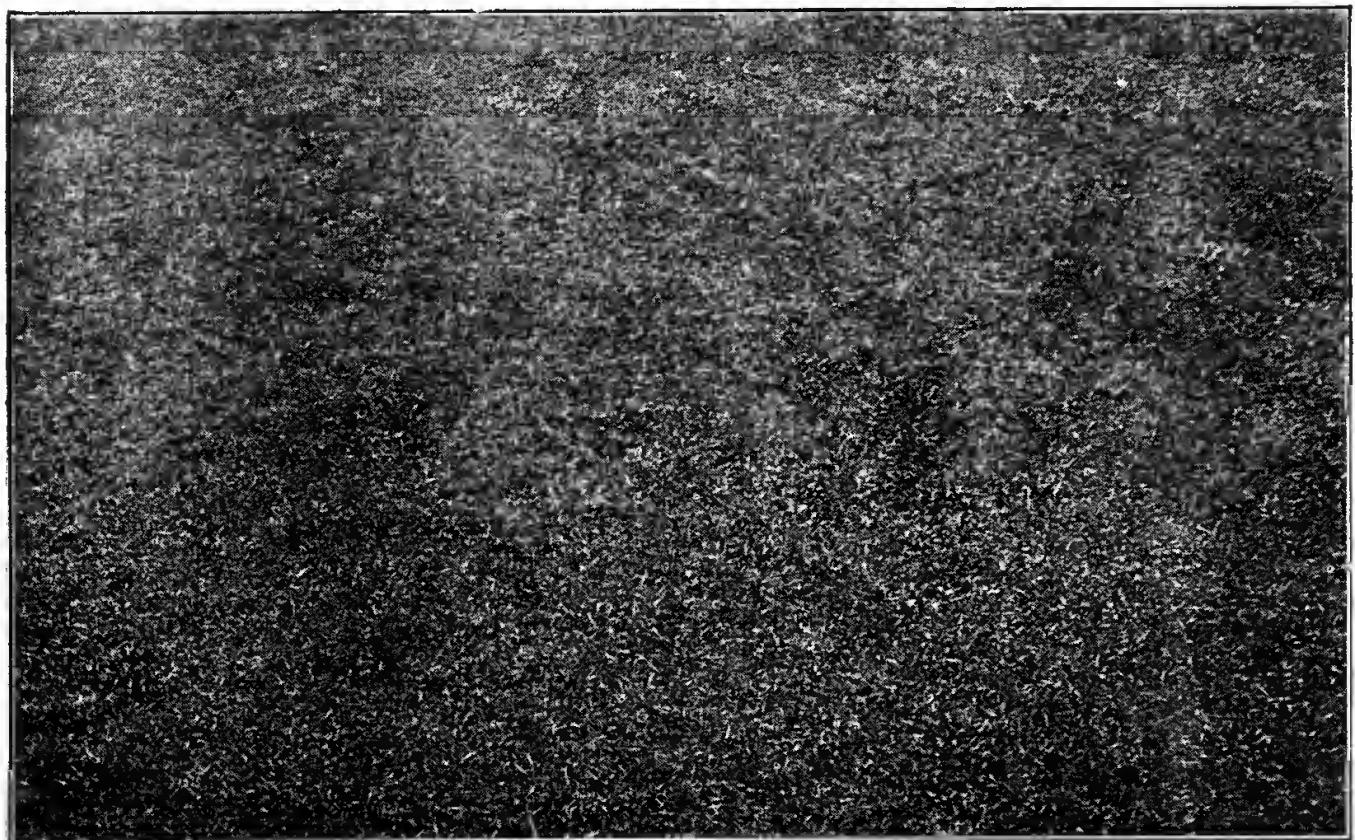
No. 7.—In my opinion this is the most interesting of them all, especially when taken in conjunction with No. 1, as it is the same piece of ground, taken a few days after treatment, but now has no worm casts, and is as clean as a new pin, and will only require an occasional light rolling to keep it in first class condition, and will be a pleasure to play on, in place of the black, muddy surface of former days.

Apart from the great improvement in the condition of the green, the question of labour also comes into consideration, as a green freed from worms does not require to be brushed and rolled daily, a distinct saving in labour, which might be put to more profitable uses. I strongly recommend all greenkeepers, especially inland ones, to give the killer a trial, as I am perfectly sure that it will do away with a lot of worry and many complaints; and, as things are at some clubs around London and other large towns, the players have good reason to grumble when they find the putting greens soft and black by reason of the worm casts, when they can so easily be made clean and firm.



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No. 1.—A section of a green, taken from above, ready for treatment, and has not been rolled for 24 hours, showing wormcasts and the condition of the green every morning from September to June. It required rolling or brushing every morning.



No. 7.—The same section of a green, taken from above, 7 days after treatment. The turf is clean and free from wormcasts, and will only require an occasional light rolling to keep it in perfect playing condition winter and summer alike.

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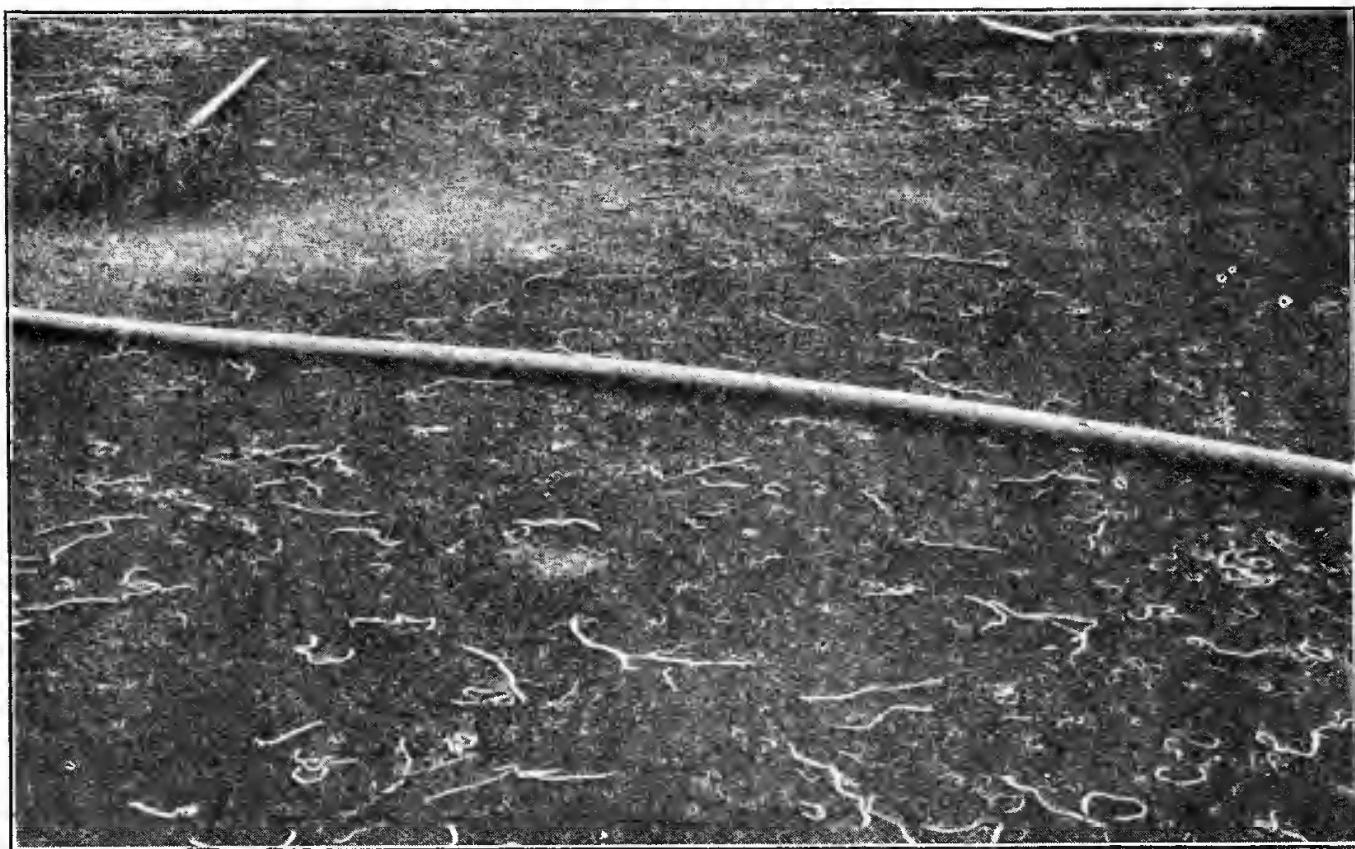


No. 2.—Spreading the "Worm Killer," under the supervision of the well-known greenkeeper, Peter Lees, at the rate of half a pound per square yard.

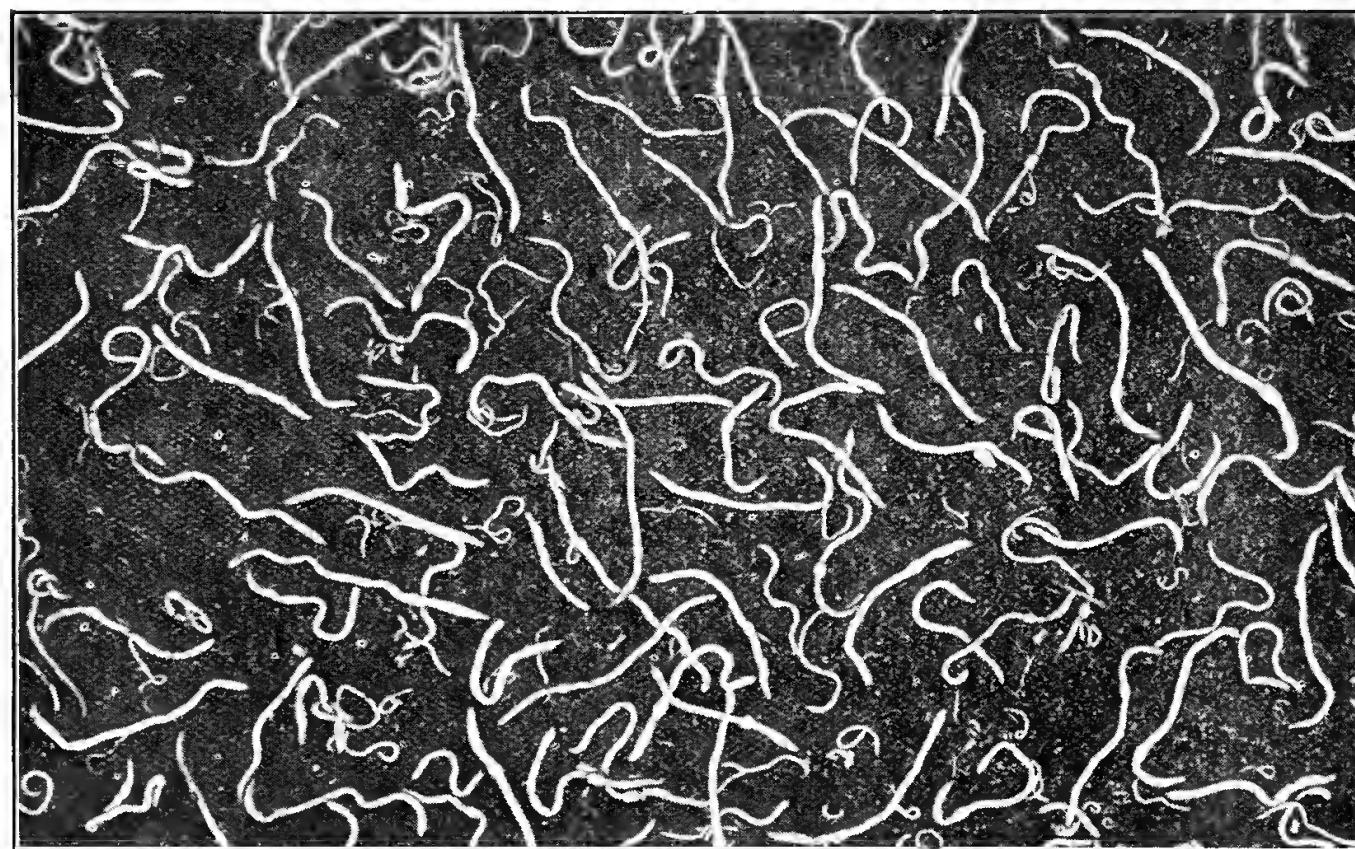


No. 3.—Peter Lees watering in the "Worm Killer." A few worms can be seen in the foreground.

Carters 237, 238, & 97, HIGH HOLBORN, LONDON.



No. 4.—The worms coming to the surface in increasing numbers two or three minutes after the "Worm Killer" was watered in.



No. 5.—The same piece of ground, taken from above, five or ten minutes later.



No. 6.—One of the three barrow loads taken from the green.

Carters, 237, 238, & 97, HIGH HOLBORN, LONDON.

CARTERS' WORM KILLER.

IMPORTANT NOTICE.

Owing to an improved process and new machinery, we have been able to concentrate and materially strengthen the potency of our Worm Killer, which may now be applied at the rate of half a pound per square yard, and can be used not only for killing worms in putting greens, but also for killing worms in lawns, croquet lawns, tennis courts, bowling greens, gravel paths, &c.

DIRECTIONS FOR USE.

- (1) Select a mild day when the earth is moist and the worms are active.
- (2) Saturate the Lawn or Green with water. This opens up the worm holes and tends to bring the worms nearer to the surface.
- (3) Cover the Lawn or Green with Carters' Worm Killer at the rate of half a pound per square yard.
- (4) Water the Worm Killer in immediately with a hose, water cart, or can, and use as much water as possible.

The effect is instantaneous. The worms, large and small, struggle to the surface in thousands and die.

The advantage of treating Lawns or Greens with our Worm Killer in the above manner is that:—

The surface, being free from worm casts, will always play true, and keep the balls clean.

The surface, being free from worm casts, will always look bright and green, instead of having that dirty, smudgy appearance so common from September to April.

The Lawn or Green, being free from worm casts, will not require to be swept or rolled every day—a distinct saving of expense.

Carters' Worm Killer is absolutely infallible, **provided that it comes into contact with the worms.**

If it does not touch the worms it cannot kill them; therefore use plenty of water.

Try one pound first before applying bulk. This will tell you if the worms are about.

Carters' Worm Killer is a powder and is not poisonous to animal and bird life, and has a stimulating effect on grass.

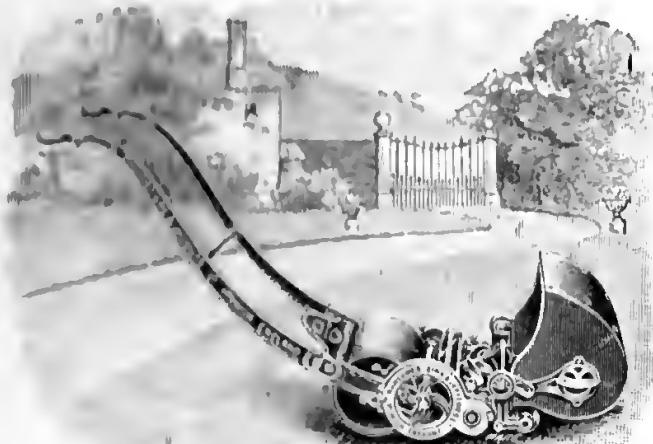
**Price—14 lb., 3/-; 28 lb., 5/-; $\frac{1}{2}$ cwt., 7/6; 1 cwt., 12/6; 5 cwt., £3;
10 cwt., £5 10s.; per ton., £10 10s.**

These prices are carriage paid for England, Scotland, and Wales, nearest port for Ireland, and F.O.B. London for export orders.

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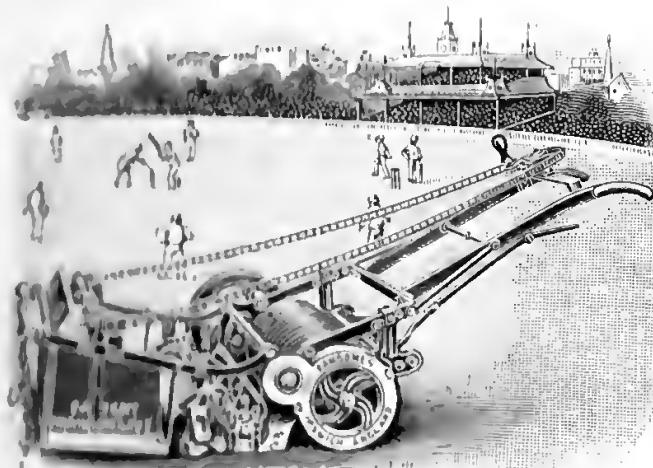
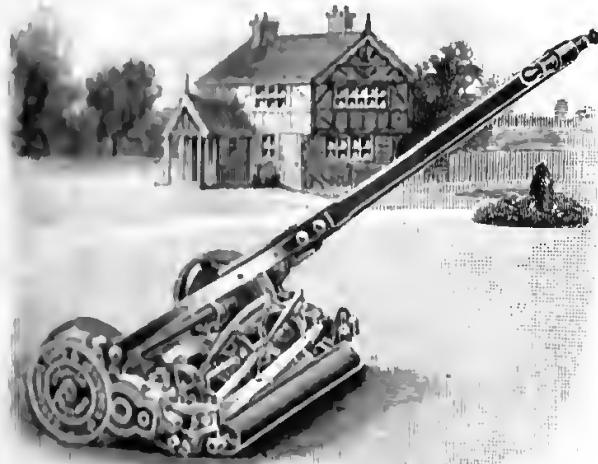
By Royal Warrant Manufacturers of Horticultural Machinery to H.M. The King.

RANSOMES' LAWN MOWERS.



"PATENT GEAR AUTOMATON."

RANSOMES' "EMPIRE" AND "EMPIRE MAJOR," "ANGLO-PARIS," AND "LION" MOWERS.



Awarded
SILVER MEDAL, R.A.S.E., 1904.
GOLD MEDALS, Royal Botanic Society,
1904 and 1905.

"PATENT GEAR AND CHAIN AUTOMATONS."

These are recommended as the best general purpose Machines made, and will leave a fine velvety surface.

RANSOMES' "AUTOMATON MINOR" MOWERS

are new light Machines, similar to the above but cheaper.

RANSOMES' "EMPIRE"

Is a new side-wheel Machine of the highest order, and can be specially recommended to anyone requiring a side-wheel Machine which will do first-class work.

"EMPIRE MAJOR"

Is a similar Machine, but larger and more powerful.

"ANGLO-PARIS."

The popular light Mower for small gardens and for ladies' use.

"LION."

A cheap and reliable Machine.

RANSOMES' "HORSE AND PONY" MOWERS.

As used at the leading Golf Clubs, Cricket Grounds, and Public Parks.

RANSOMES' MOTOR MOWERS.

The first and foremost Petrol Motor Mowers.

Over 100 of these Machines have now been made and supplied, including one to H.M. The King.

All these high-class Lawn Mowers are sold at lowest Store Prices for Cash only, on or before delivery, and are sent carriage paid.

Further Particulars, with Illustrations, can be supplied from High Holborn by return of post.

RANSOMES, SIMS, & JEFFERIES, Ltd., Orwell Works, Ipswich.

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